

Decision 22-07-001 July 14, 2022

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking on the Commission's Own Motion to improve distribution level interconnection rules and regulations for certain classes of electric generators and electric storage resources.

Rulemaking 11-09-011

DECISION MODIFYING RULE 21

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DECISION MODIFYING RULE 21

Summary

This decision determines that an increasing number of large generating facilities interconnecting through the transmission grid under the net energy metering tariff, i.e., Rule 21, creates challenges to the ability of the California Independent System Operator to ensure the safety and reliability of the transmission grid. To address this concern, the Commission finds that an immediate revision of the net energy metering exception in Section B.1 of Rule 21 is necessary as there are no viable solutions in the record to address the concern. Hence, Section B.1 is revised to limit the exemption of net energy metering generating facilities to those facilities less than or equal to one megawatt of capacity.

The revision to Section B.1 is not applicable to projects with a Permission to Operate letter or those projects with a materially complete interconnection application, submitted as of May 6, 2022. Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company are directed to submit a Tier 1 Advice Letter within 30 days of the adoption of this decision, revising Rule 21 and all related tariffs to comply with this change.

A second exception in Section B.1 of Rule 21, for non-export generating facilities, is maintained at this time as non-export generating facilities do not create the same safety and reliability concerns as net energy metering generating facilities. The Energy Division is authorized to facilitate a workshop, within 90 days of the adoption of this decision, to discuss specific circumstances under which non-export facilities could create material operational challenges, including load masking, and how to address any such challenges.

1. Background

The Commission initiated Rulemaking (R.) 11-09-011 on September 22, 2011 to review and, if necessary, revise the rules and regulations governing interconnecting generation and storage resources to the electric distribution systems of Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric Company (SG&E), and Southern California Edison Company (SCE) (jointly, Utilities). Such rules and regulations are set forth in Electric Tariff Rule 21 (Rule 21). R.11-09-011 addressed the issues identified in the June 20, 2012 Assigned Commissioner's Scoping Memo and Ruling and had been closed by the Commission. As discussed further below, the instant decision solely involves the question of a modification to Decision (D.) 12-09-018 of R.11-09-011 and/or a modification to Rule 21 to address safety and reliability concerns.

1.1. Decision 12-09-018

D.12-09-018 adopted a settlement agreement, which "fundamentally" reformed Rule 21.¹ As noted by D.12-09-018, the Commission found the settlement to be reasonable in light of the record "as it accomplishes a number of critical goals of this rulemaking by addressing policy and technical issues essential to timely, predictable and transparent interconnection to the distribution system."² The Commission also found the settlement to be consistent with law and in the public interest.³

Relevant to this decision, D.12-09-018 adopted additional new language in subsection B.1 of Rule 21 to "more clearly state when an applicant may apply for interconnection pursuant to Rule 21 procedures, as opposed to the California

¹ D.12-09-018 at 2.

² D.12-09-018 at 2.

³ D.12-09-018 at Conclusion of Law 7.

Independent System Operator (CAISO) procedure or the procedures in a utility's [Wholesale Distribution Tariff]"⁴ as follows:

"All Generating Facilities seeking Interconnection with Distribution Provider's Transmission System shall apply to the California Independent System Operator (CAISO) for Interconnection and be subject to CAISO Tariff except for 1) Net Energy Metering Generating Facilities and 2) Generating Facilities that do not export to the grid or sell any exports sent to the grid (Non-Export Generating Facilities). Net Energy Metering Generating Facilities and Non-Export Generating Facilities subject to Commission jurisdiction shall interconnect under this Rule regardless of whether they interconnect to Distribution Provider's Distribution or Transmission System."

"Generating Facility interconnections to Distribution Provider's Distribution System that are subject to Federal Energy Regulatory Commission (FERC) jurisdiction shall apply under Distribution Provider's Wholesale Distribution Tariff (WDAT)."⁵

1.2. Reopening the Record to Consider Modification

Pursuant to Public Utilities Code Section 1708,⁶ the assigned Administrative Law Judge issued a Ruling on April 7, 2021 (April Ruling), which reopened the record of R.11-09-011 to determine if the exception in Section B.1 of Rule 21 remains appropriate and whether it could result in reliability and safety concerns for the grid, thereby requiring a modification of D.12-09-018. The Commission noticed the April Ruling to all parties in R.11-09-011 and R.17-07-007.

⁴ D.12-09-018, Appendix A at A-1.

⁵ D.12-09-018, Appendix A at A-1.

⁶ Public Utilities Code Section 1708 allows the Commission, at any time and upon notice to the parties (and with opportunity to be heard), to rescind, alter, or amend any decision.

The April Ruling stated that D.12-09-018 created a pathway for net energy metering systems less than or equal to one megawatt to interconnect to transmission grids through Rule 21. The one-megawatt cap was the maximum capacity allowable, pursuant to AB X1 29 (Kehoe), Stats. 2001, ch. 8, which increased the eligible system size from 10 kilowatts to 1 megawatt. However, as a result of D.16-01-044, the one-megawatt cap was eliminated.

The April Ruling explained that the Commission's Energy Division had become aware of instances where distributed energy resources, sized in the tens to hundreds of megawatts for each installation, are interconnecting to the transmission system and taking service under the net energy metering tariff. The Ruling stated that these interconnections have raised grid stability issues with respect to two matters: 1) an absence of telemetry sharing between Utilities and CAISO; and 2) an inability to ensure that the facilities connected to the transmission system are safely configured to meet transmission grid requirements, especially as it relates to inverter programming.

The April Ruling instructed parties to file comments responding to questions contained in the ruling to assist the Commission in its review of the exception and in determining whether transmission grid requirements are being met in a safe manner.

On April 23, 2021, the following parties filed comments responding to the questions in the April Ruling: California Energy Storage Association (CESA); California Solar & Storage Association (CALSSA);⁷ CAISO; Green Power Institute; PG&E; SDG&E; and SCE. CALSSA and SCE filed reply comments on April 30, 2021.

⁷ A June 13, 2022 Ruling granted the June 7, 2022 motion filed by CALSSA permitting the acceptance of the filing of CALSSA's April 23, 2021 Opening Comments.

The Administrative Law Judge issued a Ruling on July 30, 2021, stating that the record lacked information necessary to address the safety and reliability concerns referenced in the April Ruling, making a workshop and a subsequent ruling necessary to complete the record. Energy Division facilitated a workshop on September 29, 2021 (September Workshop) to discuss stakeholder perspectives on maintaining transmission interconnection through Rule 21, and the potential paths forward.

Following the September Workshop, the Administrative Law Judge issued a Ruling on November 23, 2021 (November Ruling) instructing parties to file comments responding to additional questions pertaining to workshop discussions, in order to complete the record. The following parties filed comments on December 21, 2021: CESA; CAISO; Haddington Ventures, LLC (Haddington); PG&E; SDG&E; and SCE. CESA and SCE filed reply comments on January 3, 2022.

On February 3, 2022, the Administrative Law Judge issued a ruling entering the September Workshop slide presentation and two tables into the record of the proceeding. The tables updated the information contained in the slide presentation and are included as Attachment A to this decision. The ruling allowed parties an opportunity to comment on the slide presentation and tables, to ensure a complete record. On February 10, 2022, CAISO filed comments in response to the ruling; no party filed reply comments. The record of this proceeding was submitted on February 10, 2022.

R.11-09-011 remains open to consider the specific circumstances under which non-export facilities could create material operational challenges, including load masking and discuss how to address any such challenges.

2. Issues Before the Commission

This decision considers whether the exception in Section B.1 of Rule 21 remains appropriate, whether it could result in reliability and safety concerns for the grid, and whether a modification of D.12-09-018 and/or Rule 21 is necessary.

3. Modifying Rule 21 as it Relates to Systems Connecting Under the Net Energy Metering Tariff and Non-Export Systems

As discussed below, the Commission finds there are significant safety and reliability concerns with continuing to allow large net energy metering facilities to interconnect to the transmission grid through Rule 21. Utilities shall revise their Rule 21 tariffs by limiting the net energy metering interconnection exemption in Section B.1 to those facilities less than or equal to one megawatt in capacity, in order to immediately resolve the transmission safety and reliability concerns. This revision to Section B.1 is not applicable to projects with a Permission to Operate letter or those projects with a materially complete interconnection application, submitted as of May 6, 2022. As described below, the Commission recognizes the balance needed between safety and reliability and the reasonable expectations of receiving a Permission to Operate letter from the Commission.

With respect to non-export facilities interconnecting to the transmission grid through Rule 21, this decision finds there may be a concern regarding load masking. The Commission authorizes the Commission's Energy Division to facilitate an additional workshop for further stakeholder discussion regarding specific circumstances under which non-export facilities could create material operational challenges, including load masking, and how to address any such challenges.

These findings are discussed in detail below.

3.1. Comparing Rule 21 with the CAISO Tariff

This decision confirms that there are differences between interconnecting to the transmission grid through the Commission's interconnection processes (*i.e.*, Rule 21) and interconnecting to the transmission grid through the CAISO tariff. In this section, the Commission discusses the technical differences as well as timeline and financial differences between the two processes.

Asked to identify the technical differences between interconnection to the transmission grid via Rule 21 and interconnection via the CAISO tariff, SCE responds that the CAISO tariff requires telemetry and metering while Rule 21 does not require metering even if directly connected to the CAISO transmission grid.⁸ SDG&E defers to CAISO for confirmation with respect to technical requirements of the CAISO transmission grid, but suggests there are differences in inverter standards, telemetry requirements, communications, and the ability to control resources.

PG&E describes several differences in inverter requirements between the Rule 21 tariff and the CAISO tariff. This decision focuses on the differences that PG&E claims could challenge CAISO's ability to maintain a safe and reliable transmission grid. First, PG&E states that Rule 21 allows for momentary cessation for voltages less than 0.50 Per Unit while the CAISO tariff does not allow for momentary cessation.⁹ PG&E states that momentary cessation means a generator is not injecting current to support the grid during abnormal voltages disturbances. PG&E asserts that momentary cessation was observed during the Blue Cut loss of transmission solar resources event in 2016.¹⁰ Second, PG&E

⁸ SCE Opening Comments to April Ruling at 4.

⁹ PG&E Opening Comments to April Ruling at 2.

¹⁰ PG&E Opening Comments to April Ruling at 3.

claims that CAISO requires inverters to ride through loss of the Phase Locked Loop circuit for up to 150 milliseconds in order to address a momentary loss of the Phase Locked Loop circuit; PG&E asserts that Rule 21 is silent on this.¹¹ Third, PG&E claims that Active-Anti-Islanding is disabled for transmission interconnections but used in Rule 21 installations. PG&E contends the use of Active-Anti-Islanding may reduce ride-through performance and introduce power quality issues due to its destabilizing nature.¹² Fourth, PG&E claims that the CAISO tariff requires the installation of a governor or equivalent controls with the following operational specifics: (i) with a maximum 5 percent droop and +/-0.036Hz deadband; or (ii) in accordance with the relevant droop, deadband, and timely and sustained response settings form an approved NERC Reliability Standard providing for equivalent or more stringent parameters.¹³ PG&E asserts that these controls improve system frequency by requiring wind and solar to maintain headroom to provide upward frequency regulation.¹⁴ CESA notes that this primary frequency response is not a requirement in Rule 21.¹⁵

CAISO describes its interconnection requirements and states that the fundamental difference in telemetry requirements between Rule 21 interconnection and CAISO tariff interconnection is that net energy metering resources are not required to provide telemetry to the CAISO, which means they can be invisible to the CAISO despite these resources using transmission

¹¹ PG&E Opening Comments to April Ruling at 4.

¹² PG&E Opening Comments to April Ruling at 4-5.

¹³ PG&E Opening Comments to April Ruling at 5.

¹⁴ PG&E Opening Comments to April Ruling at 6.

¹⁵ CESA Opening Comments to April Ruling at 5.

capacity, changing line flows, and impacting the deliverability of other generators.¹⁶

This decision confirms there are different requirements when interconnecting to the transmission grid through CAISO as compared to Rule 21. This decision finds that the inverter differences described by PG&E could lead to challenges to CAISO's ability to maintain a safe and reliable transmission grid. One of the inverter requirements is telemetry, which provides CAISO with the necessary information to maintain transmission grid safety and reliability.

Parties were also asked to describe the technical advantages and disadvantages of transmission interconnection through Rule 21 versus the CAISO tariff. CESA states that it is "aware of potential use cases where generation and storage resources may seek interconnection at the transmission level to optimize and support onsite customer load rather than to participate in the CAISO market."¹⁷ CAISO asserts the Rule 21 process is simpler and quicker, especially for those not eligible for the CAISO fast track interconnection.¹⁸ SCE contends it cannot identify any specific advantage or disadvantage of transmission interconnection using Rule 21 as opposed to the CAISO tariff.¹⁹ SDG&E asserts transmission interconnection via Rule 21 has the disadvantage of not providing CAISO with visibility of potential generation additions and their

¹⁶ CAISO Opening Comments to April Ruling at 9.

¹⁷ CESA Opening Comments to April Ruling at 6.

¹⁸ CAISO Opening Comments to April Ruling at 10.

¹⁹ SCE Opening Comments to April Ruling at 4.

impact on the CAISO transmission system.²⁰ Without said visibility, SDG&E contends grid security may be at risk.²¹

With respect to technical disadvantages, this decision finds that interconnection of generating systems to the transmission grid through Rule 21 instead of through the CAISO tariff does not require the generating system to provide CAISO with the necessary information for CAISO to maintain transmission grid safety and reliability. Technical advantages to interconnecting to the transmission grid through Rule 21 instead of the CAISO tariff vary depending upon the complexity of the generating system. For larger or more complex systems that cannot take advantage of the CAISO's Fast Track process, the Commission agrees that interconnecting through Rule 21 is technically simpler.

Parties assert there are financial differences between interconnecting to the transmission grid via Rule 21 versus the CAISO tariff when it comes to the interconnection request fee and study costs. CAISO provides the study costs for its three interconnection options: i) Cluster Study - \$150,000 deposit; ii) Independent Study (Projects that demonstrate a need and ability to interconnect more quickly than the cluster study process.) - \$150,000 deposit; and iii) Fast Track (projects less than five megawatts) - \$500 deposit.²² SCE states that the Rule 21 interconnection request fee for net energy metering systems less than one megawatt is \$75 and the interconnection request fee is \$800 for systems greater than one megawatt.²³ SCE also submits that in Rule 21 the Commission

²⁰ SDG&E Opening Comments to April Ruling at 5.

²¹ SDG&E Opening Comments to April Ruling at 5.

²² CAISO Opening Comments to November Ruling at 5.

²³ SCE Opening Comments to November Ruling at 3 citing Rule 21.

established an additional Supplemental Review Fee of \$2500 for systems greater than one megawatt and requires the interconnection customer to be responsible for interconnection facilities cost and distribution and transmission upgrade costs.²⁴ In addition, GPI asserts it is more expensive to interconnect at the transmission-level than at distribution level because of required step-ups but provided no data for their assertion.²⁵

This decision finds that interconnection request fees for Rule 21 and the CAISO tariff differ depending upon the size of a system. For systems smaller than one megawatt, interconnection request fees in Rule 21 are less expensive than the \$500 CAISO Fast Track application processing fee. However, for systems larger than one megawatt but smaller than five megawatts, CAISO's Fast Track application fees are lower than the Rule 21 interconnection request fee. For systems larger than five megawatts, the cost comparison varies depending upon the individual system.

Parties contend there are differences in interconnection timelines when comparing the Rule 21 interconnection and the CAISO tariff. SCE asserts the Rule 21 timeline can range from six months for a project enrolled in the Fast Track Process to one year for projects enrolled through the Independent Study Process/Distribution Group Study Process.²⁶ CAISO submits the timeline is approximately six weeks for customers with projects interconnecting through the CAISO Tariff Fast Track Process, six months for projects interconnecting through

²⁴ SCE Opening Comments to November Ruling at 3 citing Rule 21.

²⁵ GPI Opening Comments to April Ruling at 4. GPI adds in its comments to the Proposed Decision that step-ups is a common engineering term to describe increasing voltage to the necessary level given the voltage of the line being interconnected to. See GPI Opening Comments to the Proposed Decision at 5.

²⁶ SCE Opening Comments to November Ruling at 3.

the Independent Study process, and two years for those interconnecting through the Cluster Study process.²⁷ This decision affirms that interconnection timelines vary across both tariffs but depend more on the size and complexity of a project.

3.2. D.12-09-018

Parties were asked to discuss the rationale for allowing transmission interconnection for Rule 21 through the Settlement Agreement adopted in D.12-09-018 and whether that initial rationale was still valid. SDG&E declined to respond, stating that responding would implicate confidentiality and non-disclosure obligations pursuant to Rule 12.6.²⁸ The Commission respects this confidentiality and, instead, reviews D.12-09-018 and the settlement to determine whether safety concerns were addressed.

In D.12-09-018, the Commission considered whether the settlement is reasonable in light of the whole record, consistent with law, and in the public interest. The instant decision reviews each of these to determine whether D.12-09-018 considered the impact on transmission grid reliability with respect to net energy metering generating facilities interconnecting to the transmission grid through Rule 21.

First, the Commission found that the proposed settlement was reasonable in light of the record stating that the settlement supported the broader goals of the Commission regarding transparency, predictability, and timeliness and addressed the following scoping issues: i) define the appropriate interconnection study process for all types of generation resources seeking interconnection to the distribution system; ii) create distribution-level interconnection procedures for

²⁷ CAISO Opening Comments to November Ruling at 5.

²⁸ SDG&E Opening Comments to April Ruling at 1.

storage technologies; iii) evaluate and determine appropriate processes for establishing distribution-level interconnection queues; iv) address Rule 21's silence on a pathway to Resource Adequacy; and v) address the limitation of aggregate generating capacity on a line section to 15 percent of that line section's peak load.²⁹ None of these findings addressed safety concerns with the interconnection of net energy metering generating facilities or non-export generating facilities to the transmission grid.

Second, the Commission found the settlement consistent with law as it furthers statutory mandates associated with various distributed generation programs (including Public Utilities Code Sections 2827 regarding net energy metering, 399.20 regarding the Renewable Feed-In Tariff, 2840-2845 regarding the feed-in tariff for Efficient Combined Heat and Power facilities, and federal and state laws regarding qualifying facilities) and Commission goals of improved timelines and predictability within interconnection protocols.³⁰ This finding did not address safety concerns with the interconnection of net energy metering generating facilities or non-export generating facilities to the transmission grid.

Third, the Commission found the settlement in the public interest in that it supports the following state and federal energy policies: federal policy goals of standardization and development of the distributed generation market by relying upon the Self Generation Incentive Program for certain portions of its interconnection procedures; the Commission's policy of standardizing interconnection terms and conditions at the level of the utility distribution

²⁹ D.12-09-018 at 21-25.

³⁰ D.12-09-018 at 25.

systems; federal and state policy goals of developing distributed generation as an alternative energy supply, and the federal and state policy goals of operating a safe and reliable electric grid. While, indeed, this finding talks about safety in terms of interconnection and reliability, the settlement addresses safety in the following manner: “the Revised Rule 21 continues to support the safety and reliability of the electric grid by retaining eight of the screens included as part of the presently effectively Rule 21 Initial Review process under the Revised Rule 21. These screens pose key technical questions that relate to system safety and reliability, such as starting voltage drop, short circuit current contribution and short circuit interrupting capability, and line configuration.”³¹

On the basis of the above, D.12-09-018 states that “the Proposed Settlement serves the public interest by supporting federal and state energy policy goals related to distributed generation, including increased standardization of interconnection terms and conditions, the development of the distributed generation market as an alternative energy supply, and the operation of a safe and reliable electric grid.”³² The Commission found the settlement, (including the newly added Section B.1 of the tariff) to serve the public interest. However, there is no mention of the potential of large net energy metering generating facilities interconnecting to the transmission grid and the impact on the reliability of the transmission grid. Further, the only mention of the newly added section B.1 is the fact that it was added. There is little discussion in the settlement agreement of the necessity for this new language, only that it expands on the existing Rule 21 tariff to more clearly state when an applicant may apply

³¹ D.12-09-018 at 34-35

³² D.12-09-018 at 35.

for interconnection pursuant to Rule 21 procedures, as opposed to the CAISO procedures or the procedures in a utility's WDAT.³³

This decision finds that D.12-09-018 did not address the issue of increasing numbers of large net energy metering generating facilities interconnecting to the transmission grid and the impact on the safety and reliability of the transmission grid. Whether it was an issue that was not addressed by parties or the Commission in D.12-09-018 or is an issue that has only recently arisen, this decision finds it appropriate to review the language in section B.1 of Rule 21 to determine whether transmission interconnected net energy metering systems could result in reliability and safety concerns for the grid.

3.3. Safety and Reliability Concerns

CAISO concurs with Energy Division staff that "large generators interconnecting under Rule 21 and participating under [net energy metering] tariffs can raise significant reliability issues" and notes that such distributed energy resources are interconnecting to the transmission system.³⁴ CAISO asserts that "neither the Commission nor the original parties to this proceeding anticipated large resources would use Rule 21 to interconnect directly to the transmission grid and then participate under a [net energy metering] tariff."³⁵ Further, CAISO underscores that while interconnection to the transmission grid was allowed through D.12-09-018, a one-megawatt cap on generator capacity previously adopted by the Commission was later removed by D.16-01-044.³⁶

³³ D.12-09-018, Appendix A at A-1 to A-2.

³⁴ CAISO Opening Comments to April Ruling at 3.

³⁵ CAISO Opening Comments to April Ruling at 3.

³⁶ CAISO Opening Comments to April Ruling at 3.

This decision pauses to discuss D.16-01-044. In eliminating the one-megawatt cap, the Commission stated that in view of the open-ended authorization in Public Utilities Code Section 2827.1(b)(5), “it is reasonable to allow systems of any size to participate, so long as they meet the statutory requirement of having “no significant impact on the distribution grid.” D.16-01-044 does not address safety concerns regarding interconnection to the transmission grid. Further, in a review of Section 2827.1(b)(5), there is no discussion of net energy metering systems interconnecting to the transmission grid. Hence, this decision finds that neither D.16-01-044 nor Public Utilities Code Section 2827.1(b)(5) address the topic of net energy metering facilities interconnecting to the transmission grid.

CAISO contends that generation from certain large solar photovoltaic resources interconnecting through the transmission grid under net energy metering “can significantly exceed onsite demand during the day, causing the generator to export large amounts of energy every day from sunrise to sunset.”³⁷ CAISO maintains the generator “is invisible to CAISO even though it is using transmission capacity, changing line flows, and impacting the deliverability of other generators.”³⁸ Further, because these resources do not have a scheduling coordinator, CAISO argues it has no recourse with these resources when faced with reliability issues.³⁹ CAISO maintains that these issues “could become serious challenges to reliability as large [net energy metering] resources proliferate both at the distribution level and, especially, the transmission level.”⁴⁰

³⁷ CAISO Opening Comments to April Ruling at 4.

³⁸ CAISO Opening Comments to April Ruling at 4-5

³⁹ CAISO Opening Comments to April Ruling at 4-5.

⁴⁰ CAISO Opening Comments to April Ruling at 5.

In response, CALSSA states it does not dispute the CAISO safety claims. However, CALSSA asserts this concern could be helped by requiring that distribution utilities inform CAISO of transmission-level Rule 21 applications, provide CAISO with site design information and engineering analysis results for those projects, and ensure telemetry data is provided to CAISO in useful timing and format.⁴¹ CESA offers that “there may be gaps in the current Rule 21 tariff language and provisions that may be needed to maintain transmission system stability and reliability.”⁴² Further, Haddington agrees there are “significant, multiple grid reliability implications from interconnecting net energy metering projects to the transmission system.”⁴³

This decision finds that an increasing number of large generating facilities interconnecting through Rule 21 to the transmission grid under net energy metering creates challenges to the safety and reliability of the transmission grid. No party disputes these challenges.

During the September Workshop, parties discussed the magnitude of this problem. Attachment A of this decision shows that large solar photovoltaic resources have only interconnected to the transmission grid in PG&E territory. According to PG&E, nine projects between two and nine megawatts are in commercial operation and interconnected through Rule 21 to PG&E’s transmission grid. One project greater than nine megawatts is also in operation. (Consumer privacy restrictions prohibit publicly providing the size of this project.) PG&E asserts that a total of 28 other projects are in the process of interconnecting to its transmission grid through Rule 21: 19 of these projects

⁴¹ CALSSA Reply Comments to April Ruling at 1-2.

⁴² CESA Opening Comments to November Ruling at 2-3.

⁴³ Haddington Opening Comments to November Ruling at 5.

range in size up to nine megawatts and the other nine projects range from nine to 33 megawatts in size. The Commission finds that the number of large net energy metering projects interconnecting to the transmission grid through Rule 21 is increasing.

Looking at net energy metering generating facilities less than or equal to one megawatt in capacity, the record is mixed as to whether these facilities create the same safety and reliability concerns as large net energy metering generating facilities. Several parties are silent on this matter and do not distinguish between the size of the facilities. Other parties support continuing the exemption for projects with capacity of less than one megawatt interconnecting to the transmission grid, with SCE contending there is no evidence regarding the number or impact of these projects.⁴⁴ In response to the proposed decision, GPI highlights that the concerns expressed by CAISO focus on large net energy metering projects. In reviewing CAISO's comments in this proceeding, CAISO discusses the removal of the one-megawatt cap and focuses its concerns on the interconnection of large resources.⁴⁵ This decision agrees that CAISO's safety and reliability concern "stems from eliminating" the one-megawatt cap and is focused on the interconnection of large net energy metering generating facilities.⁴⁶ This decision finds that, because the parties have raised no safety and reliability concerns with net energy metering generating facilities less than or

⁴⁴ See SCE Opening Comments to the Proposed Decision at 3. See support for maintaining the one-megawatt project exemption: Haddington Reply Comments to the Proposed Decision at 1-2; GPI Reply Comments to the Proposed Decision at 4 and CESA Reply Comments to the Proposed Decision at 2.

⁴⁵ CAISO Opening Comments to April Ruling at 3, discussing the removal of the cap and interconnection of large resources and CAISO Opening Comments to November Ruling at 2 discussing interconnection of large resources.

⁴⁶ GPI Opening Comments to the Proposed Decision at 4.

equal to one megawatt in capacity interconnecting to the transmission grid, there is justification for maintaining the exemption for such facilities.

Turning to non-export resources, PG&E and CAISO highlight that non-export resources do not “present threats as significant as exporting resources.”⁴⁷ CAISO submits the concern is not whether resources are interconnected through Rule 21 or the CAISO tariff but, rather, the lack of telemetry or meteorological data.⁴⁸ PG&E asserts that any customer generation masks load and that large, highly variable generation without telemetry will mask highly variable load. PG&E asserts this will make CAISO management more difficult even without exports to the grid.⁴⁹ CESA contends that “additional discussion and exploration is warranted to better understand the specific circumstances where a non-export system would create material operational challenges” for CAISO.⁵⁰ CESA suggests CAISO provide an explanation of and parties discuss how the ebb and flow of solar production from a large, non-export system impacts load variability and how this differs from other systems.

The Commission agrees that non-export systems interconnecting to the transmission grid through the Rule 21 tariff do not create the same reliability concerns as net energy metering generating facilities. As such, the Commission will not make any modifications to the non-export facilities exemption in Section B1 of Rule 21. However, this decision considers the assertions of load masking to be troubling. The Commission makes no findings regarding load masking or

⁴⁷ PG&E Opening Comments to November Ruling at 2 and CAISO Opening Comments to November Ruling at 3.

⁴⁸ CAISO Opening Comments to November Ruling at 3.

⁴⁹ PG&E Opening Comments to November Ruling at 2.

⁵⁰ CESA Reply Comments to November Ruling at 4-5.

related safety concerns, at this time. As discussed in Section 3.4 below, the Commission should continue the discussion to better understand the specific circumstances under which a non-export system could create material operational challenges and discuss how to address any such challenges.

3.4. Resolving the Safety Concerns of Net Energy Metering Systems Connecting to the Transmission Grid

While conceding that the interconnection, communication, and operational gap claims discussed in this proceeding are valid, CESA and SCE assert that there are no specific changes or recommendations in the record.⁵¹ The Commission concurs that the record does not have any detailed recommendations on how to resolve the safety and reliability concerns, despite parties given two opportunities to provide such recommendations on the record. CALSSA's recommendations of notice and telemetry data requirements are insufficient. In fact, the extent of CALSSA's telemetry recommendation is that "rules need to be updated for large, customer-sited generators interconnecting on the transmission system to provide telemetry in a way that works for CAISO and is reasonably achievable for customers."⁵² CALSSA's notice requirement is equally lacking in details.⁵³ CALSSA's recommendations provide no specifics of i) what the requirements would entail, ii) whether and how the requirements would ensure that facilities are configured to meet transmission grid

⁵¹ CESA Reply Comments to November Ruling at 1 and SCE Reply Comments to November Ruling at 1-2.

⁵² CALSSA Opening Comments to April Ruling at 1.

⁵³ CALSSA's recommendation regarding notice states: "utilities should inform CAISO of transmission-level Rule 21 applications, provide CAISO with site design information and engineering analysis results, and ensure telemetry data...reaches CAISO in useful timing and format." See CALSSA's Reply Comments to April Ruling at 1-2.

requirements, iii) whether and how the requirements address the concerns that generation can significantly exceed onsite demand and cause the generator to export large amounts of energy every day, or iv) how notice or telemetry requirements would be implemented. Further, as noted by PG&E in comments to the proposed decision, CALSSA did not offer any specifics as to who would pay for notice or telemetry requirements and whether and why Utilities should provide these services.⁵⁴

CESA recommends the Commission establish a working group to develop specific and concrete solutions to the reliability and safety concerns.⁵⁵ Supporting the exploration of solutions through a working group process, SCE recommends the Commission limit the number of meetings and establish an end date for resolution.⁵⁶ SCE highlights that multiple Rule 21 and net energy metering-related regulatory efforts are currently underway that require party and Commission resources.⁵⁷

There is also limited data in the record of this proceeding of the reasons a customer would prefer to interconnect through the transmission grid versus the distribution grid. The few anecdotal examples given underscore the aforementioned safety and reliability concerns of increasing numbers of large generating facilities interconnecting to the transmission grid via Rule 21: net energy metering solar generation and energy storage paired with direct current fast chargers along a highway corridor, large industrial facilities with onsite substations or step-down transformers, medium- and heavy-duty electric vehicle

⁵⁴ PG&E Reply Comments to Proposed Decision at 3.

⁵⁵ CESA Reply Comments to November Ruling at 2.

⁵⁶ SCE Reply Comments to November Ruling at 2.

⁵⁷ SCE Reply Comments to November Ruling at 2.

charging depots that seek bidirectional charge and discharge capability.⁵⁸ Hence, this decision determines that the Commission should eliminate the net energy metering generating facilities' exemption in Section B1 of Rule 21 for facilities greater than one megawatt in capacity.

With respect to concerns regarding additional working groups, the Commission agrees that there are multiple Rule 21 and net energy metering regulatory efforts currently underway that require the resources of the Commission, the parties, and other stakeholders. Hence, the Commission will not establish another working group to address the reliability concerns. Parties and stakeholders met to discuss this issue and have been given multiple opportunities to provide comments, including solutions. As discussed previously, no solutions or foundations for any viable solution have been suggested. Given the contents of the record, the Commission has no reason to believe that a solution exists at this time. Further, the safety and reliability concerns require the Commission to act now. As noted by CAISO, the Commission should prevent Rule 21 interconnection from exacerbating reliability issues.⁵⁹ The Commission should require Utilities to revise tariffs to eliminate the exception of net energy metering generating facilities greater than one megawatt from Section B.1 of Rule 21 and notify developers of this change.

In comments to the proposed decision, parties discussed the applicability of this revision to generating facilities currently operating under this exemption and proposed facilities that have submitted applications to operate under this

⁵⁸ CESA Opening Comments to November Ruling at 3.

⁵⁹ CAISO Reply Comments to the Proposed Decision at 2.

exemption.⁶⁰ CALSSA contends that if the exemption is eliminated, it should apply on a going-forward basis and active applications should continue to be evaluated under the version of Rule 21 that was in effect at the time of application submittal. CALSSA recommends a cutoff point for application submittal of May 6, 2022.⁶¹ CALSSA asserts the proposed decision date provides customers with “reasonable notice that the ability to apply under Rule 21 may be revoked and establishing a date in the past would avoid the possibility of early-stage projects rushing to beat a deadline.”⁶² CALSSA and CESA offer that telemetry data already collected under Rule 21 should be shared with CAISO to address the safety and reliability concerns.⁶³

The Commission should weigh the concerns of safety and reliability discussed throughout this decision with the reasonable expectations of facilities with Permission to Operate letters or with submitted applications. CESA and CALSSA contend that customers with signed interconnection agreements have mature projects that should be allowed to interconnect as planned and studied. This decision finds that projects that have received a Permission to Operate letter should be allowed to move forward under the version of Rule 21 in place at the time the letter was received. With respect to “mature” projects, projects that have submitted a materially complete application no later than May 6, 2022, as proposed by CALSSA, should be permitted to move forward with interconnection to the transmission grid via Rule 21. Additionally, while the

⁶⁰ CALSSA Opening Comments to the Proposed Decision at 3-4, PG&E Opening Comments to the Proposed Decision at 2, and GPI Reply Comments to the Proposed Decision at 3-5.

⁶¹ CALSSA Opening Comments to the Proposed Decision at 3-4.

⁶² CALSSA Opening Comments to the Proposed Decision at 4.

⁶³ CALSSA Opening Comments to the Proposed Decision at 4.

sharing of telemetry data proposed by CALSSA will not address all the safety and reliability issues discussed throughout this decision, such data will help to limit those concerns. CAISO concurs stating that if the Commission allows resources to move forward or remain in commercial operation, the Commission should require provision of the necessary data to ensure safety and reliability.⁶⁴

This decision finds it an appropriate balance to allow certain net energy metering projects to continue under the Rule 21 conditions in place at that time and directs that the telemetry data required by Rule 21 be shared with CAISO. Because there are a finite number of facilities currently interconnecting, or with materially completed applications submitted to interconnect, to the transmission grid through Rule 21 and these facilities will be providing telemetry data, the safety and reliability concerns regarding interconnecting to the transmission grid should be manageable. Accordingly, net energy metering generating facilities with Permission to Operate letters, as of May 6, 2022, and net energy metering projects with a materially completed interconnection application, submitted by May 6, 2022, shall be allowed to continue to interconnect to the transmission grid through Rule 21, with the stipulation that telemetry data required by Rule 21 shall be shared with CAISO. Further, Utilities shall provide the required telemetry data to CAISO.

No later than 30 days after the adoption of this decision, Utilities shall file a Tier 2 Advice Letter revising Rule 21 tariff language to revise the net energy metering generating facilities exception in Section B.1 of Rule 21, pursuant to this decision. SCE, PG&E and CESA addressed aspects of this advice letter in comments to the proposed decision.

⁶⁴ CAISO Reply Comments to the Proposed Decision at 2.

3.5. Resolving Load Masking Concerns of Non-Export Systems

As noted above, parties assert that load masking has the potential to challenge CAISO's ability to maintain transmission grid reliability. This decision agrees that additional discussion and exploration is warranted so that the Commission can better understand how, where, and when a non-export system could create such a challenge. The Commission finds it prudent to adopt the CESA suggestion to continue this discussion in a staff-led workshop. The discussion will include how the ebb and flow of solar production from a large, non-export system impacts load variability and how this differs from other systems. Parties shall also propose and discuss solutions to load masking concerns.

Accordingly, the Commission should authorize the Energy Division to facilitate a workshop, to be held no later than 90 days from the adoption of this decision. This proceeding should remain open to allow for the workshop and resolution of the load masking concern.

4. Comments on Proposed Decision

The proposed decision of Administrative Law Judge Kelly A. Hymes in this matter was mailed to the parties in accordance with Section 311 of the Public Utilities Code and comments were allowed under Rule 14.3 of the Commission's Rules of Practice and Procedure. Comments were filed on May 26, 2022 by CALSSA, CESA, CAISO, Green Power Institute, Haddington, PG&E, and SCE, and reply comments were filed on May 31, 2022 by CESA, CAISO, Haddington, and PG&E. Corrections and clarifications were made to the proposed decision in response to these comments. This section does not address arguments previously stated in prior filings.

Parties provided justification to make substantive changes to the proposed decision on three matters: 1) continuation of the exception in Section B.1 for net energy metering generating facilities less than or equal to one megawatt;⁶⁵ 2) the applicability of the revised exemption in Section B.1 on pending interconnection applications and current commercially-operable projects;⁶⁶ and 3) recognition of time needed to ensure all related tariffs are revised to comply with the directives of this decision.⁶⁷ These changes are addressed in the relevant sections within this decision.

In comments to the proposed decision, CESA contends that it is important to maintain the ability of net energy metering systems to interconnect to the transmission system to allow for fair access to the tariff for all customers.⁶⁸ The revisions made to the proposed decision result in a limitation of interconnection for safety and reliability reasons rather than an elimination of the ability of systems to interconnect. Hence, fair access is maintained.

Pursuant to Rule 1.18(b), relevant written comments submitted in a proceeding will be summarized in the final decision. Public comments were submitted to the R.11-09-011 docket page by Plug Power, Inc., Agricultural Energy Commission (AECA) and the City of Fresno Mayor Jerry Dyer. Plug Power, Inc. requests the Commission to consider additional tariff changes that would allow transmission-level generators to continue to qualify for net energy

⁶⁵ GPI Opening Comments to Proposed Decision at 4 and SCE Opening Comments to Proposed Decision at 2-4.

⁶⁶ CALSSA Opening Comments to Proposed Decision at ; CESA Opening Comments to Proposed Decision at 5-7; Haddington Opening Comments to Proposed Decision at 3-5 and PG&E Opening Comments to Proposed Decision at 2.

⁶⁷ SCE Opening Comments to Proposed Decision at 4-5.

⁶⁸ CESA Opening Comments to Proposed Decision at 7.

metering arrangements given their ineligibility for the Rule 21 study process. AECA requests the Commission to continue to evaluate solutions to the safety and reliability concerns and consider allowing projects that have previously submitted interconnection applications to continue without any impact from this decision. Mayor Dyer requests the Commission exempt projects with existing applications and existing interconnection approvals (i.e., Permission to Operate letters) from the changes in the proposed decision.

5. Assignment of Proceeding

President Alice Reynolds is the assigned Commissioner and Kelly A. Hymes is the assigned Administrative Law Judge in this proceeding.

Findings of Fact

1. There are different requirements when interconnecting to the transmission grid through the CAISO tariff as compared to the Rule 21 tariff.
2. Inverter requirement differences between Rule 21 and the CAISO interconnection tariff could lead to challenges to CAISO's ability to maintain a safe and reliable transmission grid.
3. Telemetry requirements in the CAISO tariff provides CAISO with the necessary information to maintain transmission grid safety and reliability.
4. Interconnection of generating systems to the transmission grid through Rule 21 instead of the CAISO tariff does not require the generating system to provide CAISO with necessary information for CAISO to maintain transmission grid safety and reliability.
5. Technical advantages to interconnecting to the transmission grid through Rule 21 instead of the CAISO tariff vary depending upon the complexity of the generating facility.

6. Interconnection request fees for Rule 21 and the CAISO tariff differ depending upon the size of a system.

7. Interconnection timelines vary across both tariffs but depend more on the size and complexity of the project.

8. D.12-09-018 did not address the issue of increasing numbers of large net energy metering generating facilities interconnecting to the transmission grid and the impact on the safety and reliability of the transmission grid.

9. It is appropriate to review the language in section B.1 of Rule 21 to determine whether it could result in reliability and safety concerns for the grid.

10. Neither D.16-01-044 nor Public Utilities Code Section 2827.1(b)(5) address the topic of net energy metering facilities interconnecting to the transmission grid.

11. The number of large net energy metering projects interconnecting to the transmission grid through Rule 21 is increasing.

12. Generation from increasing numbers of large solar photovoltaic resources interconnecting through the transmission grid under net energy metering creates challenges to the safety and reliability of the transmission grid.

13. No party disputes the claims that increasing numbers of large generating facilities interconnecting through the transmission grid via Rule 21 under net energy metering creates challenges to the reliability of the transmission grid.

14. CAISO's safety and reliability concerns stem from eliminating the one-megawatt cap and are focused on the interconnection of large net energy metering generating facilities.

15. There are no safety and reliability concerns with net energy metering generating facilities less than or equal to one megawatt interconnecting to the transmission grid.

16. Non-export systems interconnecting to the transmission grid through either the Rule 21 tariff or the CAISO tariff do not create the same reliability concerns as net energy metering generating facilities.

17. Assertions of load masking are troubling.

18. The record does not include detailed recommendations on how to resolve the reliability concerns of net energy metering generating facilities interconnecting through Rule 21 to the transmission grid.

19. CALSSA's recommendations of notice and telemetry data requirements are insufficient.

20. An immediate revision of the net energy metering exception in Section B.1 of Rule 21 is necessary as there are no viable solutions in the record to address these concerns.

21. The record contains few examples of why a customer would prefer to interconnect through the transmission grid versus the distribution grid.

22. The few anecdotal examples in the record underscore the safety and reliability concerns.

23. There are multiple Rule 21 and net energy metering regulatory efforts currently underway that require the resources of the Commission, the parties, and other stakeholders.

24. Parties and stakeholders met to discuss reliability concerns of net energy metering generating facilities interconnecting through Rule 21 to the transmission grid and have been given multiple opportunities to provide comments, including solutions.

25. No viable solutions or foundations for any solution to the reliability concern of large net energy metering generating facilities interconnecting to the transmission grid through Rule 21 have been suggested.

26. Safety and reliability concerns require the Commission to act now and prevent Rule 21 interconnection from exacerbating reliability issues.

27. The Commission should weigh the concerns of safety and reliability with the reasonable expectations of facilities with Permission to Operate letters or with submitted interconnection applications.

28. While the sharing of telemetry data will not address all safety and reliability issues, such data will help limit the concerns.

29. There are a finite number of net energy metering facilities with Permission to Operate letters or with submitted interconnection applications by May 6, 2022.

30. The combination of a finite number of net energy metering generating facilities interconnecting to the transmission grid via Rule 21 in combination with the telemetry data of these facilities should result in manageable transmission grid safety and reliability concerns.

31. It is prudent to adopt the suggestion to hold a staff-led workshop to discuss how, where, and when a non-export system could lead to load masking.

Conclusions of Law

1. The Commission should not make any modifications to the non-export facilities exemption in Section B.1 of Rule 21.

2. The Commission should continue the discussion of load masking as it relates to non-export systems to better understand the specific circumstances where a non-export system would create material operational challenges and explore how to address this.

3. The Commission should eliminate the net energy metering generating facilities exemption in Section B.1 of Rule 21 for facilities greater than one megawatt.

4. The Commission should require Utilities to modify tariffs to revise the exception of net energy metering generating facilities from Section B.1 of Rule 21 pursuant to this decision and notify developers of this change.

5. The Commission should exempt (i) net energy metering generating facilities interconnecting to the transmission grid through Rule 21 that have received a Permission to Operate letter by May 6, 2022 and (ii) proposed net energy metering generating facilities proposing to interconnect to the transmission grid through Rule 21 that have submitted a materially completed interconnection application by May 6, 2022, from the modification to Rule 21, Section B.1.

6. The Commission should require Utilities to share with CAISO the Rule 21 required telemetry data from the following net energy metering facilities: (i) net energy metering generating facilities interconnecting to the transmission grid through Rule 21 that have received a Permission to Operate letter by May 6, 2022 and (ii) proposed net energy metering generating facilities proposing to interconnect to the transmission grid through Rule 21 that have submitted a materially completed interconnection application by May 6, 2022.

7. The Commission should authorize the Energy Division to facilitate a workshop regarding specific circumstances under which a non-export facility could create material operational challenges, including load masking, and how to address any such challenges.

O R D E R

IT IS ORDERED that:

1. Net Energy Metering generating facilities greater than one megawatt seeking interconnection with a distribution provider's transmission system shall no longer be exempt from the requirement in Electric Tariff Rule 21 to apply to

the California Independent System Operator (CAISO) for interconnection and be subject to the CAISO Tariff. This order is not applicable to net energy metering generating facilities with Permission to Operate letters received as of May 6, 2022 or proposed net energy metering facilities with materially complete interconnection applications submitted as of May 6, 2022.

2. Pacific Gas and Electric Company, San Diego Gas & Electric Company and Southern California Edison Company shall provide to the California Independent System Operator the Rule 21 required telemetry data of: (i) net energy metering generating facilities interconnected to the transmission grid with Permission to Operate letters, received as of May 6, 2022, and (ii) proposed net energy metering facilities proposing to interconnect to the transmission grid, with materially complete interconnection applications, submitted as of May 6, 2022.

3. Within 30 days of the issuance of this decision, Pacific Gas and Electric Company, San Diego Gas & Electric Company and Southern California Edison Company shall submit a Tier 2 Advice Letter revising Section B.1 of Rule 21 as follows:

All Generating Facilities seeking Interconnection with Distribution Provider's Transmission System shall apply to the California Independent System Operator (CAISO) for Interconnection and be subject to CAISO Tariff except for i) Net Energy Metering Generating Facilities less than or equal to one megawatt and ii) Generating Facilities that do not export to the grid or sell any exports sent to the grid (Non-Export Generating Facilities). Non-Export Generating Facilities subject to Commission jurisdiction shall interconnect under this Rule regardless of whether they interconnect to Distribution Provider's Distribution or Transmission System.

4. Pacific Gas and Electric Company, San Diego Gas & Electric Company and Southern California Edison Company shall review the language in all related tariffs that could be impacted by the change in Ordering Paragraph 1. Utilities shall include all necessary language revisions for related tariffs in the Tier 2 Advice Letter filing required by Ordering Paragraph 3 above,

5. Within 90 days of the adoption of this decision, the Energy Division is authorized to facilitate a workshop in this proceeding to discuss how, where, and when a non-export system could lead to load masking. The objective of the workshop is to better understand the specific circumstances where a non-export system could create material operational challenges, including load masking, and explore how to address any such challenges.

6. Rulemaking 11-09-011 remains open.

This order is effective today.

Dated July 14, 2022, at Diamond Bar, California.

ALICE REYNOLDS
President
CLIFFORD RECHTSCHAFFEN
GENEVIEVE SHIROMA
DARCIE L. HOUCK
Commissioners

Commissioner John Reynolds, being necessarily absent, did not participate.